Please **AMEND** the claims as follows:

1. (Currently Amended) A method of implementing storage virtualization in a storage area network, the method comprising:

creating a virtual enclosure, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network;

associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network, thereby enabling one or more network devices within the storage area network to be associated with the virtual ports; and

assigning an address or identifier to each of the virtual ports;

wherein associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network includes sending a message from a first network device to a ~~physical~~ port of a second network device within the storage area network to instruct the ~~physical~~ port of the second network device to handle messages addressed to the address or identifier assigned to the associated virtual port that are received by the port of the second network device subsequent to the message sent by the first network device such that ~~,~~ ~~thereby enabling~~ the first network device instructs ~~to instruct~~ the ~~physical~~ port of the second network device to act on behalf of the virtual port.

2. (Cancelled)

3. (Previously Amended) The network device as recited in claim 18, wherein the

Atty Docket No.: ANDIP007/8999 - 2 - Application No. 10/045,883

PAGE 5/27 * RCVD AT 5/8/2007 7:58:59 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/19 * DNIS:2738300 * CSID:5106630920 * DURATION (mm-ss):07-20

storage area network is a virtual storage area network.

4. (Previously Amended) The network device as recited in claim 18, wherein a Node World Wide Name is associated with the virtual enclosure.

5. (Currently Amended) The network device as recited in claim 18 wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated ~~physical~~ port of a network device within the storage area network.

6. (Currently Amended) The network device as recited in claim 18, wherein the ~~physical~~ port of the second network device within the storage area network is a port of a fibre channel device.

7. (Previously Amended) The network device as recited in claim 18, wherein an FCID is assigned to each of the virtual ports.

8. (Currently Amended) The method as recited in claim 1, further comprising:

selecting a number of virtual ports to be included in the virtual enclosure.

9. (Previously Amended) The network device as recited in claim 18, wherein the number of virtual ports of the virtual enclosure is greater than a number of ports of each network device within the storage area network.

10. (Previously Amended) The method as recited in claim 1, wherein associating

Atty Docket No.: ANDIP007/8999 - 3 - Application No. 10/045,883

each of the virtual ports of the virtual enclosure with a port of a second network device

within the storage area network comprises:

associating the virtual ports with ports of one or more network devices within the

storage area network.

11. (Previously Amended) The network device as recited in claim 18, wherein

associating each of the virtual ports of the virtual enclosure with a port of a network device

within the storage area network comprises:

sending a bind message to a port of a network device within the storage area network,

thereby binding the port of a network device within the storage area network to one or more

of the virtual ports.

12. (Previously Amended) The network device as recited in claim 11, further

comprising:

sending a trap message to one or more additional ports of one or more network

devices within the storage area network, thereby instructing the one or more additional ports

of one or more network devices within the storage area network to trap messages directed to

one of the virtual ports.

13. (Previously Amended) The network device as recited in claim 18, wherein one

or more of the virtual storage units each comprises a VLUN or other virtual representation of

storage on the storage area network.

14. (Original) The method as recited in claim 1, further comprising:

assigning one or more virtual storage units to the virtual enclosure.

15. (Original) The method as recited in claim 14, wherein the one or more virtual storage units each comprise a VLUN or other virtual representation of storage on the storage area network.

16. (Currently Amended) A computer-readable medium storing thereon computer-readable instructions for implementing storage virtualization in a storage area network, comprising:

instructions for creating a virtual enclosure, the virtual enclosure having one or more virtual ports and adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network;

instructions for associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network, thereby enabling one or more network devices within the storage area network to be associated with the virtual ports; and

instructions for assigning an address or identifier to each of the virtual ports;

wherein the instructions for associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network includes instructions for sending a message from a first network device to a ~~physical~~ port of a second network device within the storage area network to instruct the ~~physical~~ port of the second network device to handle messages addressed to the address or identifier assigned to the associated virtual port <u>that are received by the port of the second network device subsequent to the message sent by the first network device</u>, ~~thereby enabling~~ <u>such that</u> the first network device ~~to instruct~~ <u>instructs</u> the ~~physical~~ port of the second network device to act on behalf of the virtual port.

17.    (Currently Amended)  An apparatus for implementing storage virtualization in a

storage area network, comprising:

means for creating a virtual enclosure, the virtual enclosure having one or more

virtual ports and adapted for representing one or more virtual storage units, each of the virtual

storage units representing one or more physical storage locations on one or more physical

storage units of the storage area network;

means for associating each of the virtual ports of the virtual enclosure with a port of a

network device within the storage area network, thereby enabling one or more network

devices within the storage area network to be associated with the virtual ports; and

means for assigning an address or identifier to each of the virtual ports;

wherein the means for associating each of the virtual ports of the virtual enclosure

with a port of a network device within the storage area network includes means for sending a

message from a first network device to a ~~physical~~ port of a second network device within the

storage area network to instruct the ~~physical~~ port of the second network device to handle

messages addressed to the address or identifier assigned to the associated virtual port <u>that are</u>

<u>received by the port of the second network device subsequent to the message sent by the first</u>

<u>network device</u>,~~thereby enabling~~ <u>such that</u> the first network device <u>instructs</u> ~~to instruct~~ the

~~physical~~ port of the second network device to act on behalf of the virtual port.


18.    (Currently Amended)  A network device adapted for implementing storage

virtualization in a storage area network, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

Atty Docket No.: ANDIP007/8999            - 6 -            Application No. 10/045,883

creating a virtual enclosure, the virtual enclosure having one or more virtual ports and adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network;

associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network, thereby enabling one or more network devices within the storage area network to be associated with the virtual ports; and

assigning an address or identifier to each of the virtual ports;

wherein associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network includes sending a message from a first network device to a ~~physical~~ port of a second network device within the storage area network to instruct the ~~physical~~ port of the second network device to handle messages addressed to the address or identifier assigned to the associated virtual port <u>that are received by the port of the</u> <u>second network device subsequent to the message sent by the first network device,</u> ~~thereby~~ ~~enabling~~ <u>such that</u> the first network device <u>instructs</u> ~~to instruct~~ the ~~physical~~ port of the second network device to act on behalf of the virtual port.


19.    (Currently Amended) A method of performing LUN mapping in a storage area network, the method comprising:

accessing a LUN mapping table having one or more entries, each of the entries identifying an initiator in the storage area network, one or more of a set of one or more virtual ports of a virtual enclosure, and associating a specified logical unit with one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network, wherein the virtual enclosure is adapted for representing the set of one or more virtual storage units and

each of the virtual ports is associated with a ~~physical~~ port of a network device within the storage area network, wherein the ~~physical~~ port of the network device has received a message from another network device instructing the ~~physical~~ port to handle messages addressed to the associated virtual port <u>that are received by the port of the network device subsequent to the message sent by the another network device such that the another network device instructs the port of the network device to act on behalf of the virtual port</u>; and

when a request for the specified logical unit is received from the initiator via one of the associated virtual ports, identifying one of the entries in the LUN mapping table and employing the one or more virtual storage units specified in the entry to service the request.

20. (Currently Amended) A computer-readable medium storing thereon instructions for performing LUN mapping in a storage area network, comprising:

instructions for accessing a LUN mapping table having one or more entries, each of the entries identifying an initiator in the storage area network, one or more of a set of one or more virtual ports of a virtual enclosure, and associating a specified logical unit with one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network, wherein the virtual enclosure is adapted for representing the set of one or more virtual storage units and each of the virtual ports is associated with a ~~physical~~ port of a network device within the storage area network, wherein the ~~physical~~ port of the network device has received a message from another network device instructing the ~~physical~~ port to handle messages addressed to the associated virtual port <u>that are received by the port of the network device subsequent to the message sent by the another network device such that the another network device instructs the port of the network device to act on behalf of the virtual port</u>; and

instructions for identifying one of the entries in the LUN mapping table and

employing the one or more virtual storage units specified in the entry to service the request when a request for the specified logical unit is received from the initiator via one of the associated virtual ports.

21.    (Currently Amended)  In a first network device, a method of implementing storage virtualization in a storage area network, the method comprising:

sending a virtualization message to a ~~physical~~ port of a second network device within the storage area network, the virtualization message instructing the ~~physical~~ port to handle messages addressed to a virtual port of a virtual enclosure, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network, wherein the virtualization message indicates that the ~~physical~~ port is to handle messages addressed to an address or identifier assigned to the virtual port <u>that are received by the port of the second network device</u> <u>subsequent to the virtualization message sent by the first network device such that the first</u> <u>network device instructs the port of the second network device to act on behalf of the virtual</u> <u>port</u>; and

receiving a virtualization response from the ~~physical~~ port of the second network device in response to the virtualization message.

22.    (Previously Amended)        The apparatus as recited in claim 34, wherein the virtual port is identified by a NWWN and a PWWN.

23.    (Currently Amended) The apparatus as recited in claim 34, wherein the virtualization response indicates that the ~~physical~~ port is configured to handle messages addressed to the

Atty Docket No.: ANDIP007/8999              - 9 -              Application No. 10/045,883

PAGE 12/27 * RCVD AT 5/8/2007 7:58:59 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/19 * DNIS:2738300 * CSID:5106630920 * DURATION (mm-ss):07-20

virtual port of the virtual enclosure.

24. (Currently Amended) The apparatus as recited in claim 34, wherein the virtualization message indicates that the ~~physical~~ port is to obtain an address or identifier assigned to the virtual port.

25. (Previously Amended) The apparatus as recited in claim 24, wherein the virtualization message is a bind message or a trap message.

26. (Previously Amended) The apparatus as recited in claim 24, wherein the virtualization response comprises the address or identifier assigned to the virtual port.

27. (Currently Amended) The apparatus as recited in claim 34, wherein the virtualization message indicates that the ~~physical~~ port is to obtain an address or identifier assigned to the virtual port from a DNS server.

28. (Previously Amended) The method as recited in claim 21, further comprising:
receiving an address or identifier assigned to the virtual port.

29. (Previously Amended) The apparatus as recited in claim 24, wherein the address or identifier is an FCID.

30. (Cancelled)

31. (Previously Amended) The apparatus as recited in claim 21, wherein the address or identifier is an FCID.

32. (Currently Amended) A computer-readable medium storing thereon computer-readable instructions for implementing storage virtualization in a first network device of a storage area network, comprising:

instructions for sending a virtualization message to a ~~physical~~ port of a second network device within the storage area network, the virtualization message instructing the ~~physical~~ port to handle messages addressed to a virtual port of a virtual enclosure that are received by the port of the second network device subsequent to the virtualization message sent by the first network device such that the first network device instructs the port of the second network device to act on behalf of the virtual port, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network; and

instructions for receiving a virtualization response from the ~~physical~~ port of the second network device in response to the virtualization message.

33. (Currently Amended) An apparatus adapted for implementing storage virtualization in a first network device of a storage area network, comprising:

means for sending a virtualization message from the first network device to a ~~physical~~ port of a second network device within the storage area network, the virtualization message instructing the ~~physical~~ port to handle messages addressed to a virtual port of a virtual enclosure that are received by the port of the second network device subsequent to the virtualization message sent by the first network device such that the first network device

instructs the port of the second network device to act on behalf of the virtual port, the virtual

enclosure having one or more virtual ports and being adapted for representing one or more

virtual storage units, each of the virtual storage units representing one or more physical

storage locations on one or more physical storage units of the storage area network; and

      means for receiving a virtualization response from the physical port of the second

network device in response to the virtualization message.


34.    (Currently Amended) An apparatus adapted for implementing storage virtualization

in a first network device of a storage area network, comprising:

    a processor; and

    a memory, at least one of the processor and the memory being adapted for:

    sending a virtualization message from the first network device to a physical port of a

second network device within the storage area network, the virtualization message instructing

the physical port to handle messages addressed to a virtual port of a virtual enclosure that are

received by the port of the second network device subsequent to the virtualization message

sent by the first network device such that the first network device instructs the port of the

second network device to act on behalf of the virtual port, the virtual enclosure having one or

more virtual ports and being adapted for representing one or more virtual storage units, each

of the virtual storage units representing one or more physical storage locations on one or

more physical storage units of the storage area network; and

    receiving a virtualization response from the physical port of the second network

device in response to the virtualization message.


35.    (Currently Amended) A method of implementing storage virtualization in a first

network device of a storage area network, the method comprising:

receiving a virtualization message at a ~~physical~~ port of the first network device from a second network device within the storage area network, the virtualization message instructing the ~~physical~~ port to handle messages addressed to a virtual port of a virtual enclosure <u>that are received by the port of the first network device subsequent to the virtualization message sent by the second network device such that the second network device instructs the port of the first network device to act on behalf of the virtual port</u>, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network; and

sending a virtualization response from the ~~physical~~ port of the first network device to the second network device in response to the virtualization message.

36.    (Currently Amended) The network device as recited in claim 52, wherein the virtualization message indicates that the ~~physical~~ port is to obtain an address or identifier assigned to the virtual port.

37.    (Previously Amended)        The method as recited in claim 35, further comprising:

obtaining and storing the address or identifier assigned to the virtual port.

38.    (Currently Amended) The network device as recited in claim 52, wherein the virtualization message indicates that the ~~physical~~ port is to obtain an address or identifier assigned to the virtual port from a DNS server.

39.    (Previously Amended)        The method as recited in claim 37, further comprising:

Atty Docket No.: ANDIP007/8999                    - 13 -                    Application No. 10/045,883

sending the address or identifier assigned to the virtual port.

40. (Previously Amended) The method as recited in claim 37, wherein the address or identifier is an FCID.

41. (Currently Amended) The network device as recited in claim 52, wherein the virtualization message indicates that the ~~physical~~ port is to handle messages addressed to an address or identifier assigned to the virtual port.

42. (Previously Amended) The network device as recited in claim 41, wherein the address or identifier is an FCID.

43. (Previously Amended) The method as recited in claim 35, further comprising: handling messages addressed to the address or identifier assigned to the virtual port.

44. (Previously Amended) The method as recited in claim 35, further comprising: handling messages addressed to the virtual port of the virtual enclosure.

45. (Previously Amended) The method as recited in claim 37, further comprising: handling messages addressed to the address or identifier assigned to the virtual port.

46. (Previously Amended) The method as recited in claim 35, further comprising: receiving a report message requesting an identification of one or more of the virtual storage units supported by an address or identifier assigned to one of the virtual ports; sending a reply message identifying one or more of the virtual storage units.

Atty Docket No.: ANDIP007/8999 - 14 - Application No. 10/045,883

PAGE 17/27 * RCVD AT 5/8/2007 7:58:59 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/19 * DNIS:2738300 * CSID:5106630920 * DURATION (mm-ss):07-20

47. (Original) The method as recited in claim 46, wherein the address or identifier is an FCID.

48. (Previously Amended) The network device as recited in claim 52, wherein one or more of the virtual storage units comprises a VLUN or other virtual representation of storage on the storage area network.

49. (Original) The method as recited in claim 46, wherein the one or more of the virtual storage units identified in the reply message are those virtual storage units that are visible to an initiator sending the report message.

50. (Currently Amended) A computer-readable medium storing thereon computer readable instructions for implementing storage virtualization in a first network device of a storage area network, comprising:

instructions for receiving a virtualization message at a ~~physical~~ port of the first network device from a second network device within the storage area network, the virtualization message instructing the ~~physical~~-port to handle messages addressed to a virtual port of a virtual enclosure <u>that are received by the port of the first network device subsequent to the virtualization message sent by the second network device such that the second network device instructs the port of the first network device to act on behalf of the virtual port</u>, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network; and

instructions sending a virtualization response from the ~~physical~~-port of the first

Atty Docket No.: ANDIP007/8999                 - 15 -                 Application No. 10/045,883

network device to the second network device in response to the virtualization message.


51. (Currently Amended) A network device adapted for implementing storage virtualization in a first network device of a storage area network, comprising:

    means for receiving a virtualization message at a ~~physical~~ port of the first network device from a second network device within the storage area network, the virtualization message instructing the ~~physical~~ port to handle messages addressed to a virtual port of a virtual enclosure <u>that are received by the port of the first network device subsequent to the virtualization message sent by the second network device such that the second network device instructs the port of the first network device to act on behalf of the virtual port</u>, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network; and

    means for sending a virtualization response from the ~~physical~~ port of the first network device to the second network device in response to the virtualization message.


52. (Currently Amended) A network device adapted for implementing storage virtualization in a first network device of a storage area network, comprising:

    a processor; and

    a memory, at least one of the processor and the memory being adapted for:

    receiving a virtualization message at a ~~physical~~ port of the first network device from a second network device within the storage area network, the virtualization message instructing the ~~physical~~ port to handle messages addressed to a virtual port of a virtual enclosure <u>that are received by the port of the first network device subsequent to the virtualization message sent by the second network device such that the second network device instructs the port of the</u>

first network device to act on behalf of the virtual port, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network; and

sending a virtualization response from the ~~physical~~ port of the first network device to the second network device in response to the virtualization message.